

Application Serial No. 09/811,417
Amendment after final under 37 C.F.R. § 1.116 dated March 3, 2004
Reply to final Office action of January 6, 2004

Amendments to the Specification:

Replace the specification of record with the following substitute specification under 37 C.F.R. § 1.121(b)(3). No new matter has been added. A clean copy of the substitute specification is appended.

TITLE OF THE INVENTION

A Rotary Drive Device of a Polishing Device

BACKGROUND OF THE INVENTION

Field of the Invention:

[0001] The present invention relates to a rotary drive device of a polishing device. More specifically, the present invention relates to a rotary drive device of a polishing table, a table for CMP (Chemical Mechanical Polishing) or polisher which is used to flatten an end face of a semiconductor wafer or an end face of liquid crystal glass.

Description of Related Art:

[0002] Conventionally, a method called CMP (Chemical Mechanical Polishing) is used to flatten semiconductor wafers and so on. In short, a wafer is put on a turn table, then, the wafer is pushed to the turn table by a polisher and is polished thereby having slurry sprayed between the wafer and turn table (for example, see Japanese Patent Laid-Open No. Hei 8-167585).

[0003] It is necessary to drive this turn table and/or the polisher at low vibration and with low noise, and accordingly a direct drive motor of a low rotating speed, which will be referred to as DD motor hereinbelow, is widely used for this purpose. In other words, a drive shaft locating at the center of the turn table is coupled with an output shaft of the DD motor. However, in that case of conventional DD motor system, there was a problem that it is voluminous and heavy.

[0004] In addition, as wafer size increases (for example, from 8 inches to 12 inches), a still bigger torque is needed to drive a table. Because of this, the problem intensifies more. More specifically, in order to obtain a large torque, a volume and weight of a DD motor increase, and thus, a necessary electric current becomes big, and the generation of heat increases.

[0005] On the other hand, in order to obtain an evenness of high dignity in a wafer, it is an important problem for CMP that changes and vibration in a rotational speed of a table are suppressed strictly. However, absolute amount of change in the rotational speed of a motor is generally almost fixed. In addition, a change rate of the motor speed is determined as a rate of

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Appendix

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[0005] On the other hand, in order to obtain an evenness of high dignity in a wafer, it is an important problem for CMP that changes and vibration in a rotational speed of a table are suppressed strictly. However, absolute amount of change in the rotational speed of a motor is generally almost fixed. In addition, a change rate of the motor speed is determined as a rate of a change relative to the motor speed. Because of these reasons, it is difficult for a DD motor, the rotational speed of which is low, to suppress a change rate of speed at low level.

[0006] In order to overcome this problem, there is a proposal wherein a high-speed motor and

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